

SAHARA

MULTI-SOLVENT MISTER

SAHARA INSTALLATION & OPERATIONS MANUAL V1.0



EZTIMERS
MANUFACTURING

702-376-6693 - bruce@eztimers.com - www.eztimers.com

**REMOTE NOZZLE WHICH
EVAPORATES THE PURIFIED WATER
IS MOUNTED ON THE ROOF OR
EXTERIOR WALL**

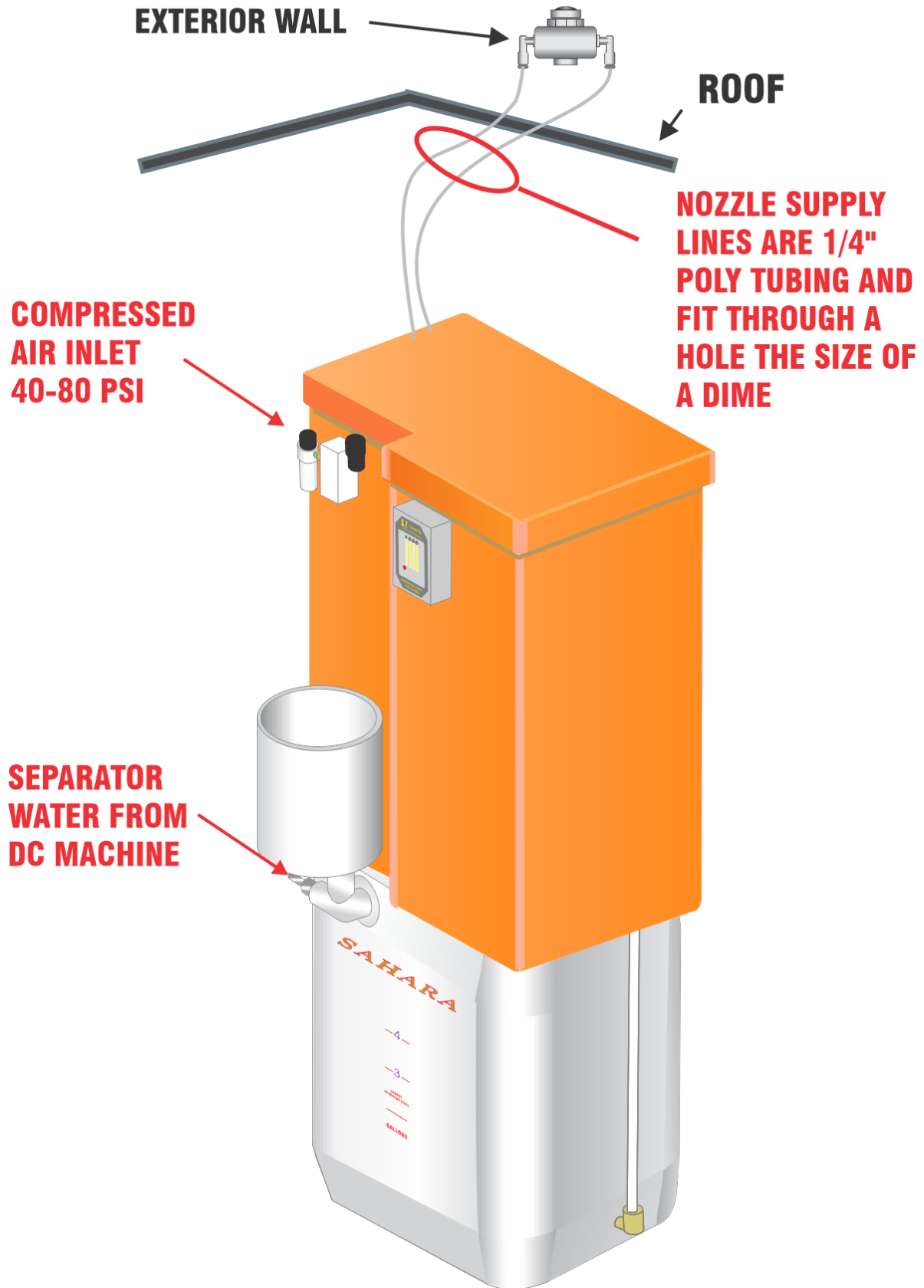


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UNPACKAGING

UNBOXING AND PLACEMENT OF SAHARA



STEP 1:

Open cardboard box at the end shown and remove the Sahara.

The Sahara is normally located close to the dry cleaning machine to reduce water handling. However, it may be located wherever convenient. The left side and front of the unit should be easily accessible. Leave a few feet of extra tubing in order to be able to move the unit for cleaning.



STEP 3:

Place a kitty litter pan or equivalent on top of 2 cinder blocks.



STEP 2:

Cut strapping and the shrink wrap holding the carton space to the processing tower. Remove the manual and the lid.



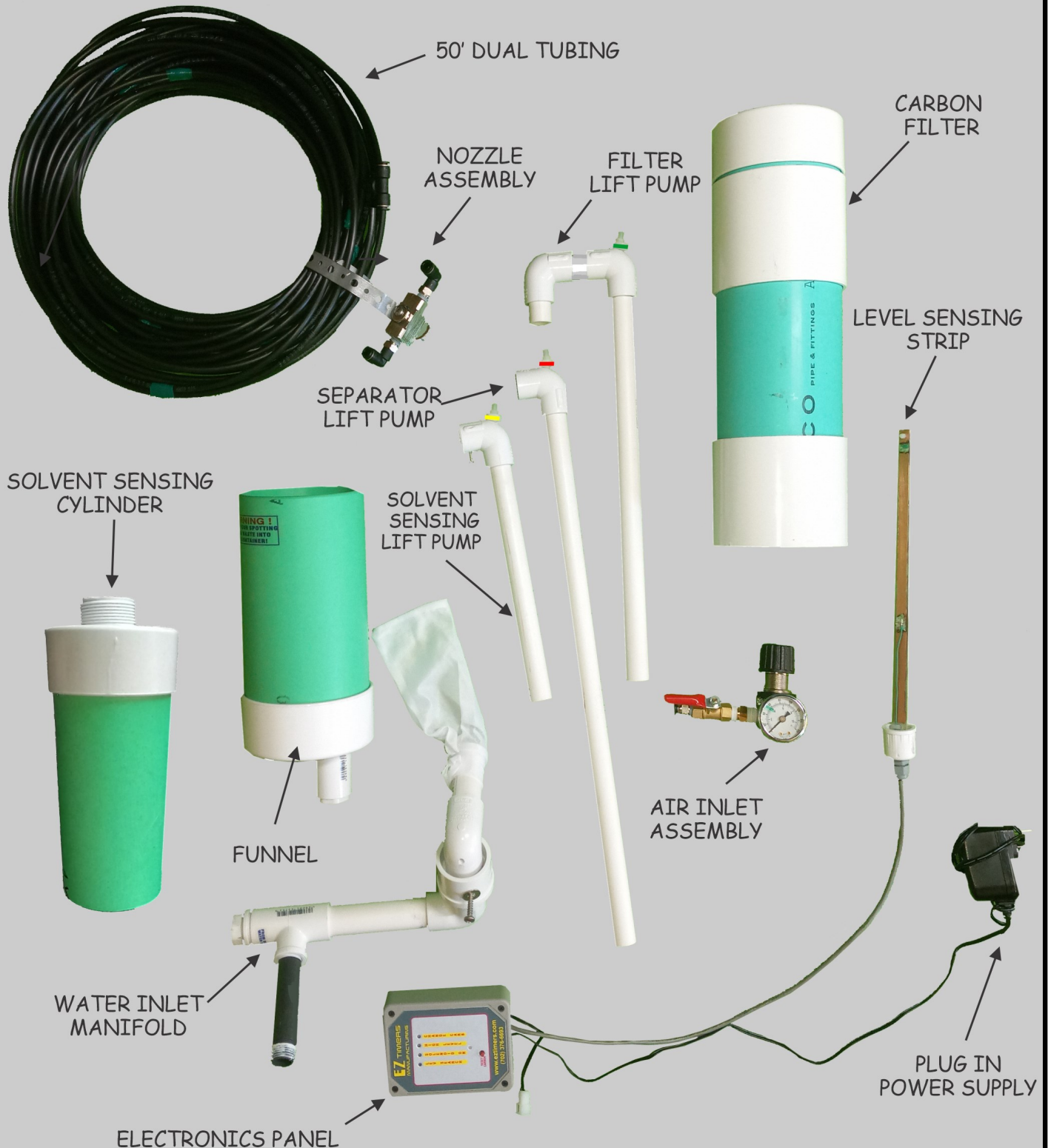
STEP 4:

Place the Sahara in the pan.

[illegible]

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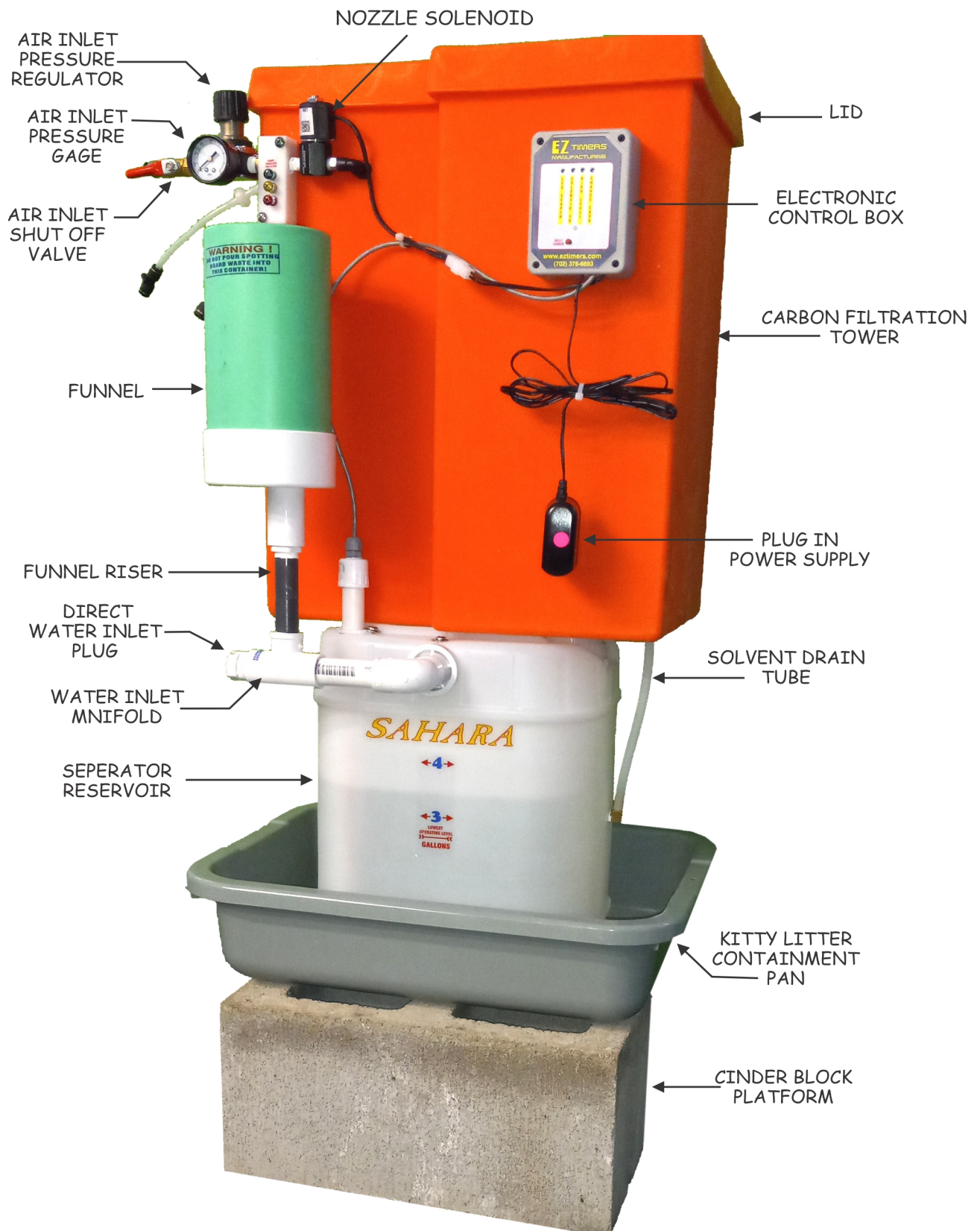
CAUTION!
WHEN UNWRAPPING COMPONENTS BE
CAREFUL NOT TO CUT ANY WIRES OR TUBING



COMPONENT IDENTIFICATION

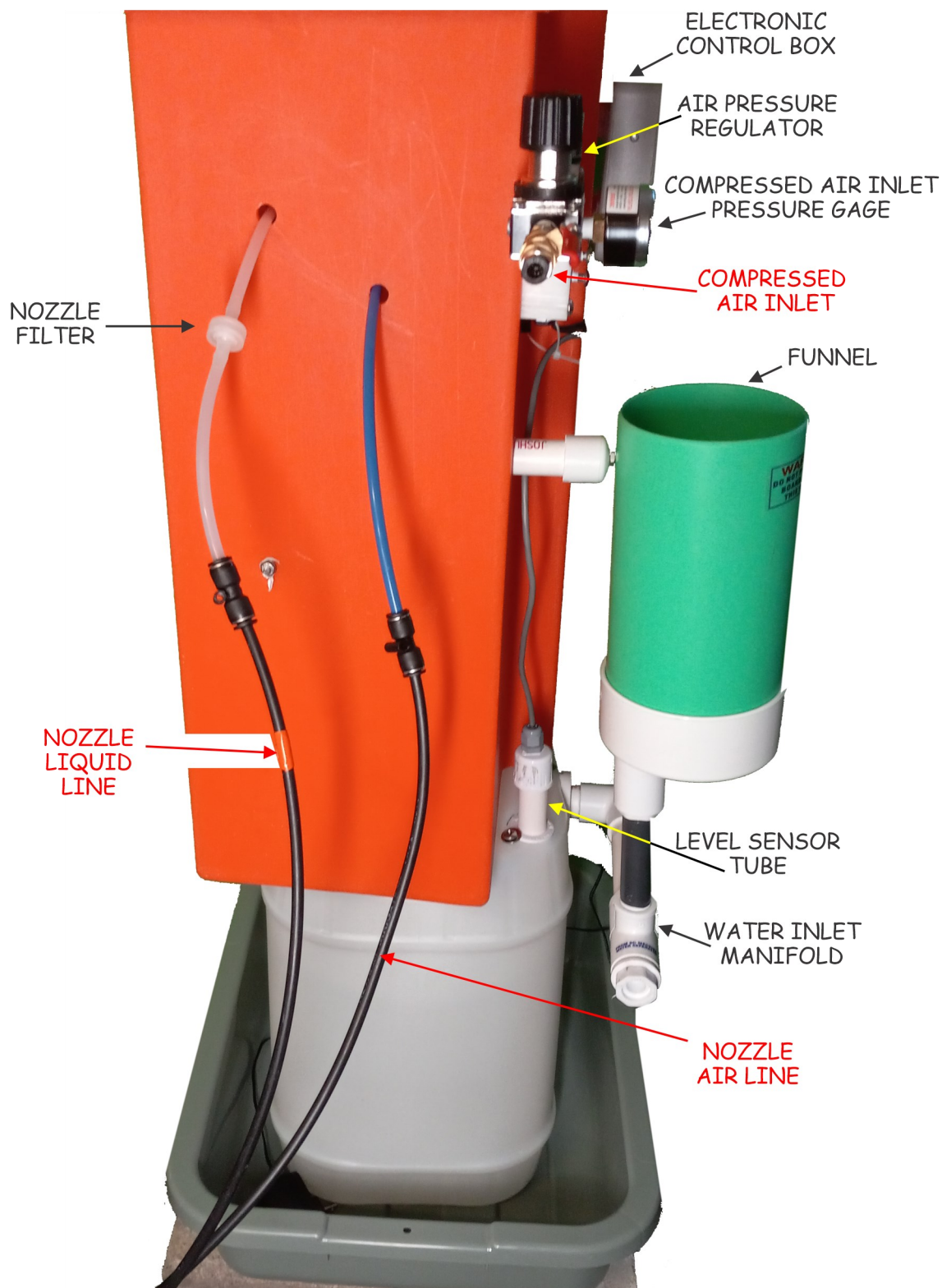
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SAHARA COMPONENTS AS SEEN FROM FRONT OF UNIT



SAHARA MISTER

SAHARA COMPONENTS AS SEEN FROM THE LEFT SIDE OF UNIT



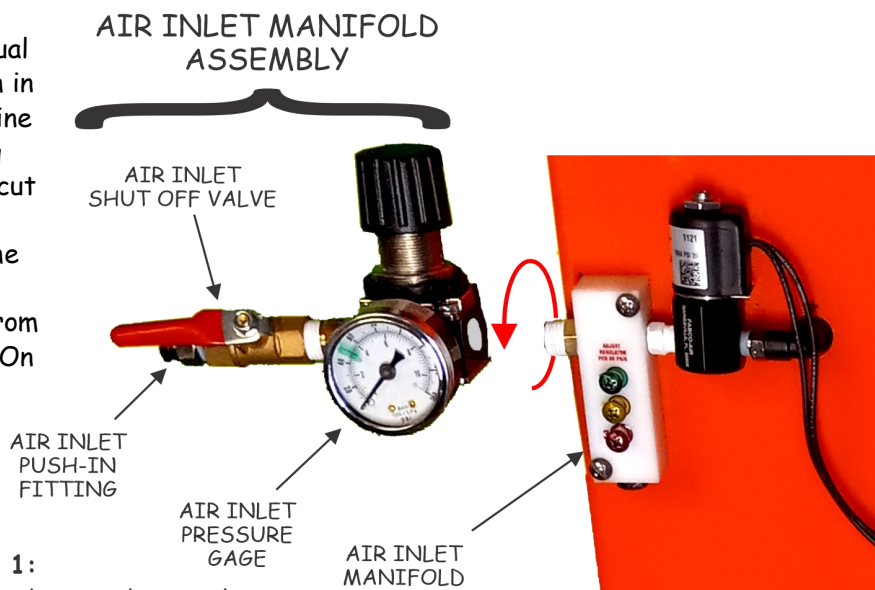
ASSEMBLY

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INLET AIR MANIFOLD & ELECTRONICS INSTALLATION

NOTE:

Zip tied to the coil of dual tubing is a tee with push in connections. If the air line feeding the dry cleaning machine is 1/4" you can cut it and install the tee to supply the inlet air to the Sahara. Use a leftover piece of tubing to run from the tee to the air inlet. On the Sahara.



STEP 1:

Screw the air inlet regulator assembly into the nipple in the air inlet manifold



STEP 2:

Attach the electronics box by pressing the two Velcro surfaces together



STEP 3:

Push the solenoid connectors together.

ELECTRONICS INSTALLATION CONTINUED

STEP 4:

Insert the copper level sensing strip into the level sensing tube and gently press the cap onto the level sensing tube. **DO NOT PRESS THE CAP HARD ONTO LEVEL SENSING TUBE**



STEP 5:

Gather the wires for the level sensor and solenoid and use the wire tie to fasten them to the wire tie connector.



STEP 6:

Tighten wire tie. This is what your progress of assembling the Sahara should look like at this point in the assembly of the unit.



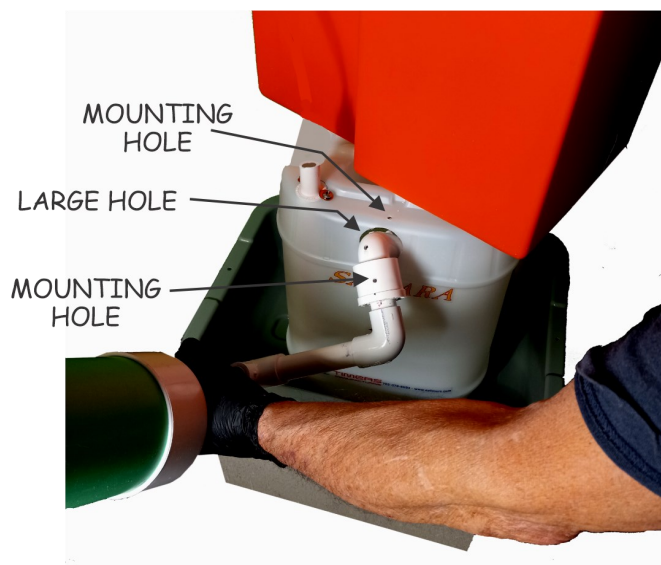
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WATER INLET MANIFOLD & FUNNEL INSTALLATION



STEP 1:

Screw the funnel onto the water inlet manifold. Rotate the funnel so the mounting hole is in the position shown. Unscrew the retaining screw and washer and save for use in STEP 3.



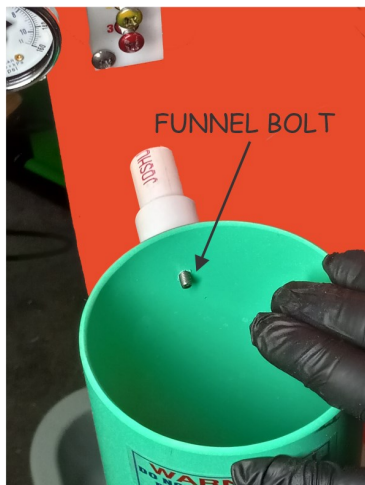
STEP 2:

Insert the water inlet manifold through the LARGE hole in the side of the separator tank.



STEP 3:

Align the hole on the top of the separator tank with the hole drilled in the water inlet manifold. When the holes are aligned insert the screw through the washer and thread the screw hole in top of the water inlet manifold.



STEP 4:

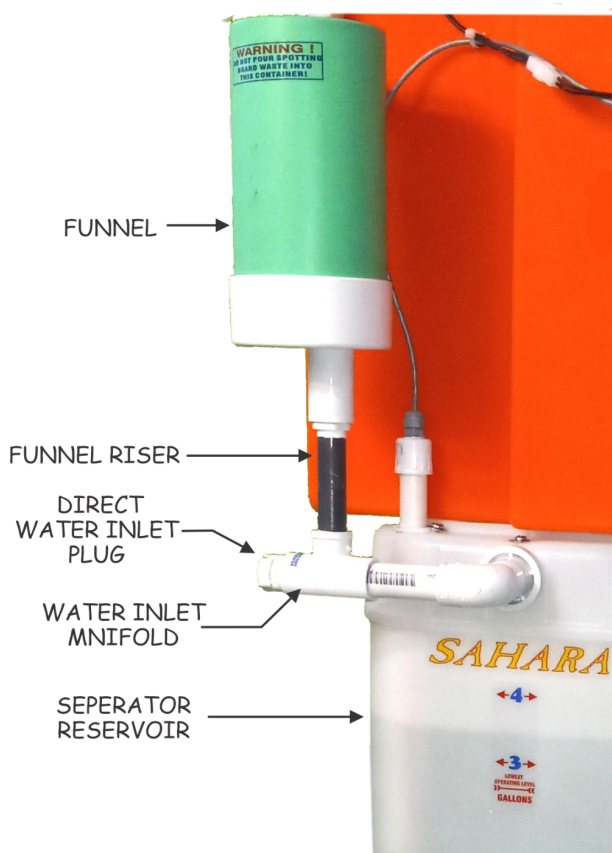
Rotate the funnel until the mounting hole is aligned with the funnel bolt, then push the funnel onto the funnel bolt.



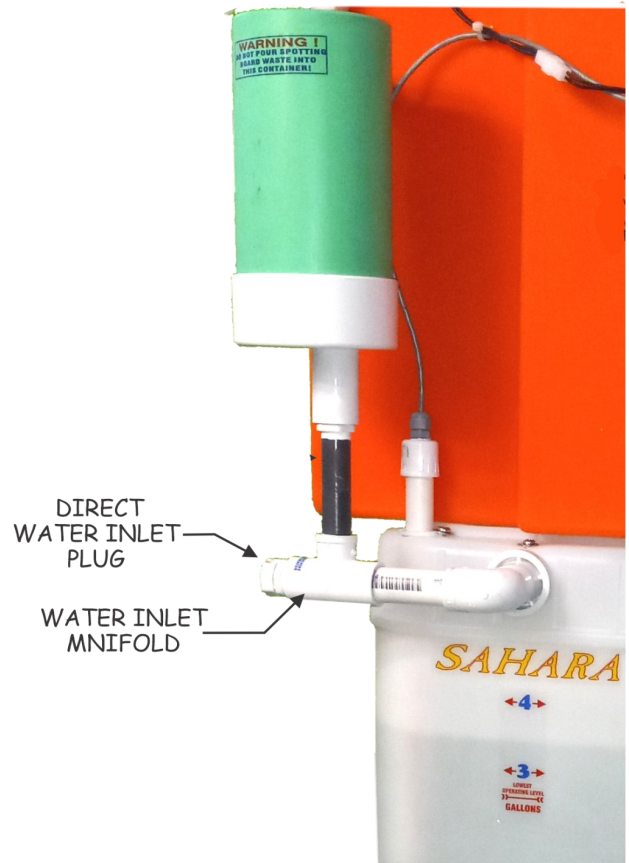
STEP 5:

Insert a paper towel into the funnel to block the hole at the bottom in case you drop the wingnut, then spin the wing nut onto the funnel bolt. Remove the paper towel.

FINISHED WATER INLET MANIFOLD INSTALLATION



WATER INLET MANIFOLD
SHOWN INSTALLED



WATER INLET MANIFOLD
DIRECT CONNECTIONS

STEP 1:

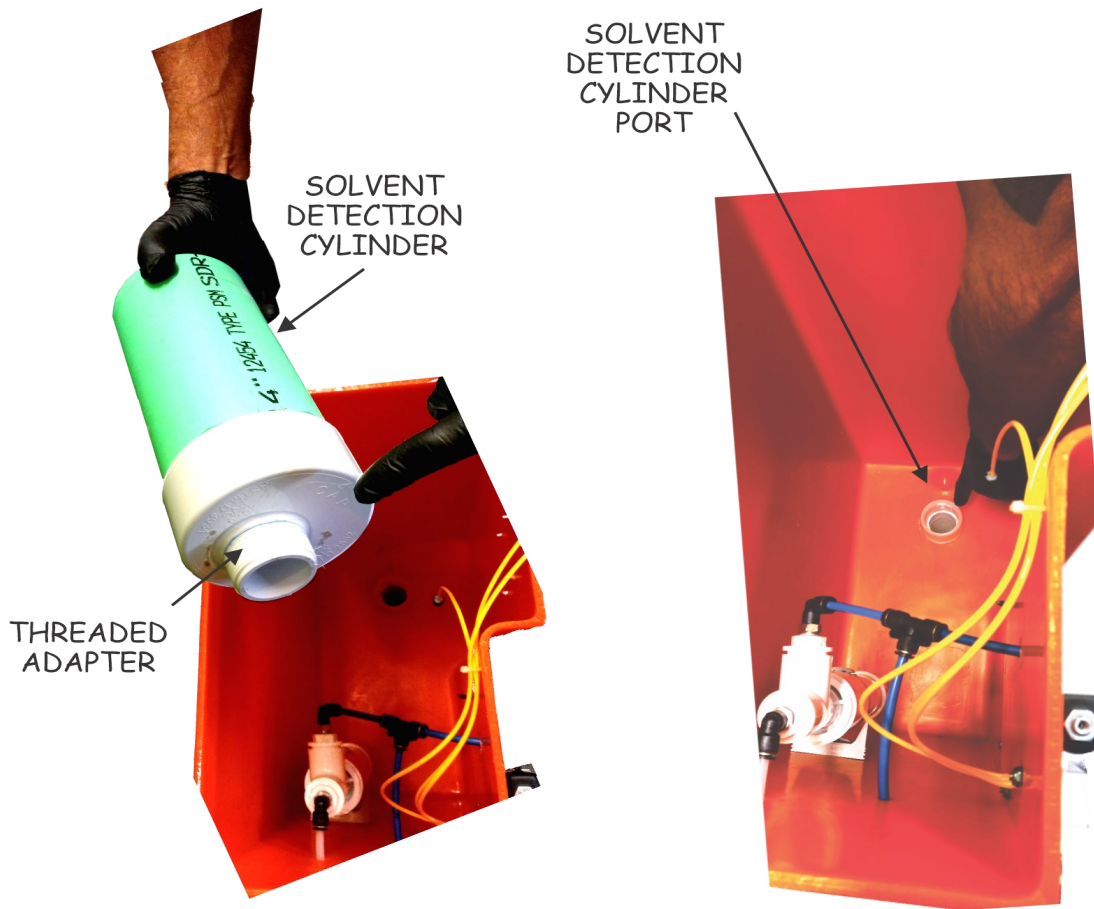
IF THE HEIGHT OF THE DRY CLEANING MACHINE SEPARATOR IS ABOVE THE HEIGHT OF THE DIRECT WATER INLET PLUG ON THE WATER INLET MANIFOLD you can connect the outlet of the dry cleaning machine's water separator directly to the Sahara avoiding having to manually handle the separator water. Unscrew the direct water inlet plug from the water inlet manifold and screw in a nylon or brass 1/2 " hose barb to connect a flexible vinyl hose to the outlet of the dry cleaning machine separator. **IF THE HEIGHT OF THE AIR VACUUM IS ABOVE THE HEIGHT OF THE DIRECT WATER INLET PLUG ON THE WATER INLET MANIFOLD** you can tee it with the outlet of the water separator and connect it to the water inlet manifold as shown in the illustration to the right. **IF YOU ROUTE THE WATER LINES ACROSS THE FLOOR AVOID SHARP OR HOT SURFACES. AVOID KINKS AND BENDS WHICH WOULD COLLAPSE THE WATER LINES AND PROTECT THE AREAS WHERE THE TUBING IS EXPOSED TO FOOT TRAFFIC.**



WATER INLET MANIFOLD
CONNECTION TO AIR VACUUM

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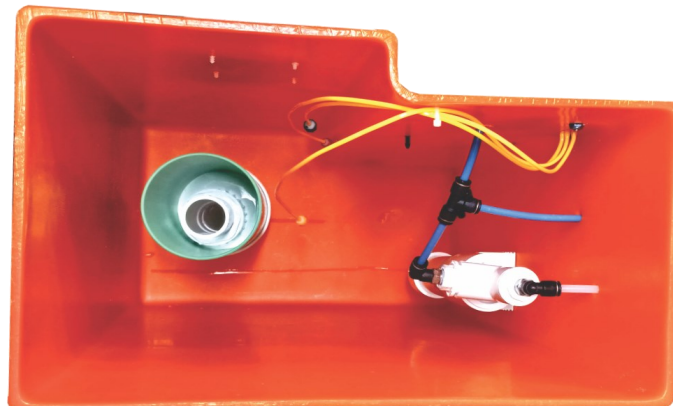
INSTALLING THE SOLVENT SENSING CYLINDER



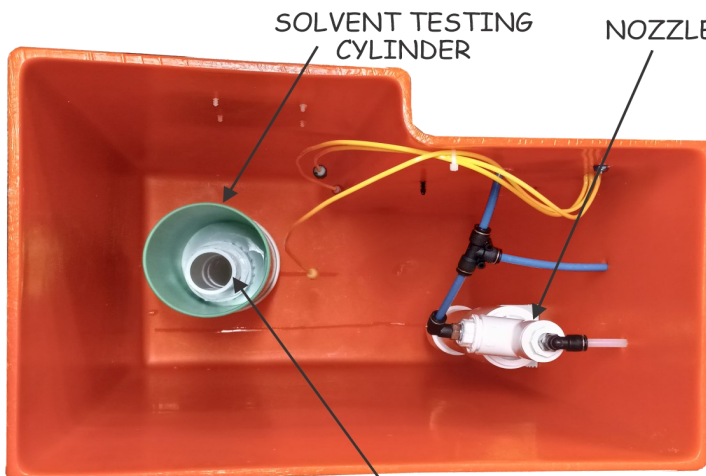
STEP 1:

Carefully screw the solvent detection cylinder into the solvent detection cylinder port paying attention to **NOT CROSS-THREAD OR EXCESSIVELY TIGHTEN**. The threaded adapter is not centered in the bottom of the cylinder, **THIS IS NORMAL**.

TOP VIEW OF ASSEMBLED CARBON FILTER TOWER WITH THE SOLVENT DETECTION CYLINDER INSTALLED



SEPARATOR & SOLVENT SENSING CYLINDER LIFT PUMP PUMP INSTALLATION



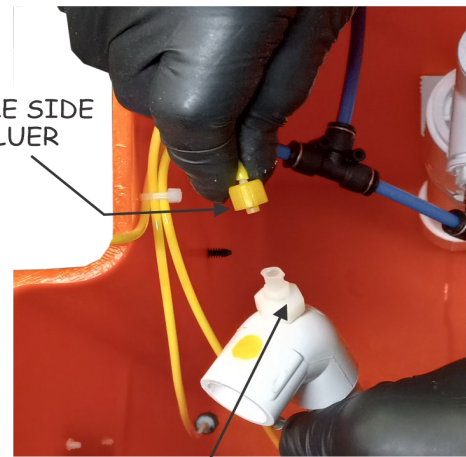
SOLVENT TESTING CYLINDER

NOZZLE PUMP

STAND PIPE

STEP 1:

View the inside of the filtration tower to be sure it looks like this.

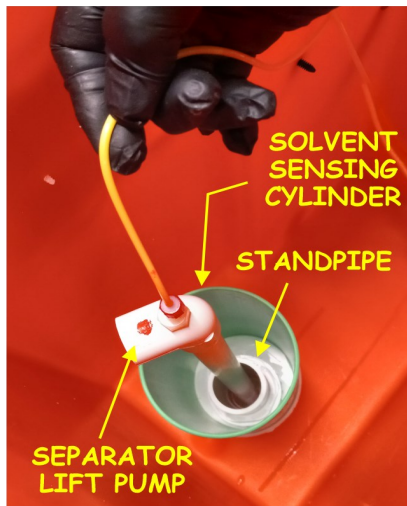


FEMALE SIDE OF LUER

MALE SIDE OF LUER

STEP 2:

When working with luer connectors remember they are delicate. Just 1/4 turn will tighten or loosen these fittings. **You'll feel when they are just tight DO NOT OVER TIGHTEN!**



SOLVENT SENSING CYLINDER

STANDPIPE

SEPARATOR LIFT PUMP



SOLVENT SENSING LIFT PUMP

SCREW



SOLVENT SENSING CYLINDER

STEP 3:

The separator lift pump is the longest one and has a red marking on its elbow. Attach the red colored luer connectors and slide the lift pump down the hole in the standpipe in the solvent testing cylinder.

STEP 4:

The solvent sensing lift pump is the one with yellow marking on its elbow and the with screw in it. Attach the yellow colored luer connectors and drop the lift pump into the solvent sensing cylinder being sure it is positioned so the elbow rests directly on the edge of the solvent sensing cylinder and the screw is on the outer edge preventing the pump from falling into the cylinder

STEP 5:

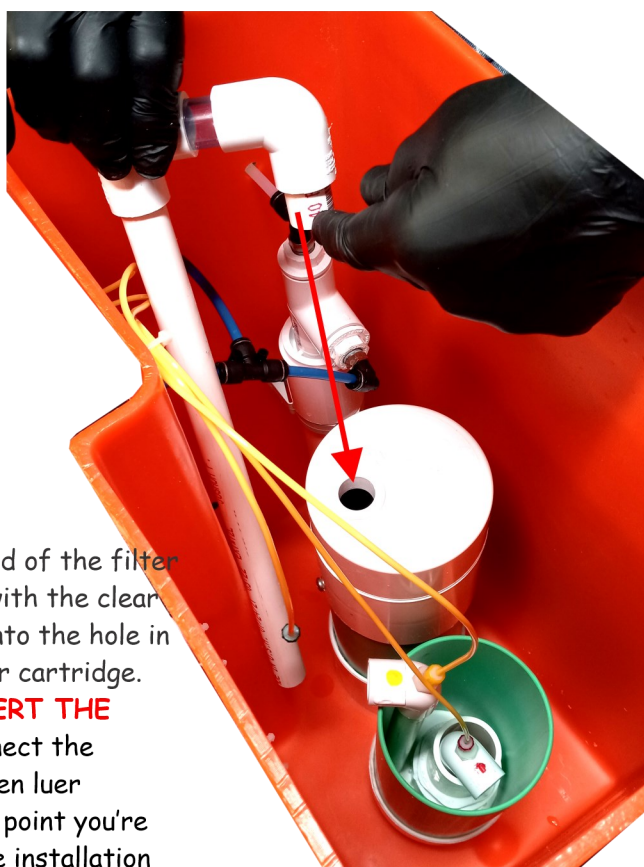
Here's how the lift pumps look when installed. The position of the pumps or the direction the elbows are pointed doesn't matter as long as the lower side of the pumps elbows are resting on the surfaces they are placed in.

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FILTER & FILTER LIFT PUMP INSTALLATION

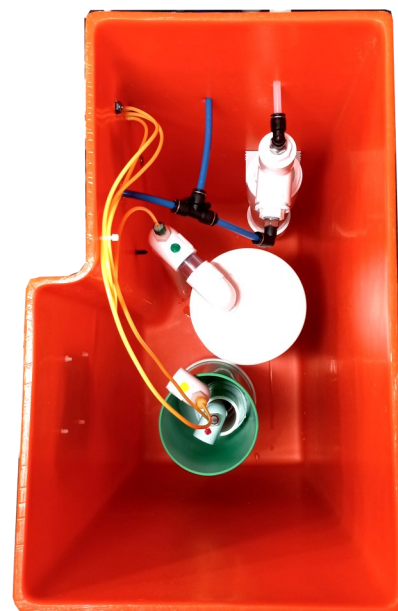
STEP 6

Place the filter cartridge into the filtration tower. There is no set place for the cartridge anywhere it easily fits is OK.



STEP 7:

Insert the short end of the filter lift pump, the one with the clear section in the top into the hole in the top of the filter cartridge. **BE SURE TO INSERT THE SHORT END.** Connect the tubing with the green luer connectors. At this point you're finished with all the installation steps inside the filter tower.



STEP 7:

Inspect your work, the inside of the tower should look like the photo above.

TUBING CONNECTIONS

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NOZZLE LOCATION AND TUBING ROUTING

LOCATING THE SAHARA:

The Sahara is normally located close to the dry cleaning machine to reduce water handling. However, it may be located wherever convenient. The left side and front of the unit should be easily accessible. Leave a few feet of extra tubing in order to be able to move the unit for cleaning. **DO NOT COIL SEVERAL FEET OF EXTRA TUBING IT WILL CAUSE MISTING PROBLEMS.**

ROUTING THE TUBING FROM THE NOZZLE:

The Sahara has been designed to mist **OUTSIDE** the plant preferably on the roof or an exterior wall. To accomplish this the Sahara is supplied with 50' of twin all weather poly tubing. It is much easier to route the tubing from the nozzle to the Sahara. Point the nozzle towards the center of the roof, or if mounted on a wall, as straight up as possible, **DO NOT POINT IT OVER PATHWAYS OR PARKING LOTS.** The twin 1/4" tubing will pass through a hole slightly larger than 1/2". Ventilation ductwork, boiler room makeup air vents, evaporative cooler drops, along side of water tower piping and unused dry cleaning machine or dryer vents are all excellent candidates for entry of the tubing into the building. When passing the tubing through a hole be sure there are no sharp edges that might cut or fray the tubing and avoid pulling tubing around sharp corners. Care must be taken to avoid the tubing from contacting hot surfaces, steam piping, or being subject to abrasion.

COLD CLIMATE CONSIDERATIONS:

In areas where freezing regularly occurs, your Sahara is shipped with a 12 VDC nozzle heater, the installation of which is shown in following pages. When running the twin tubing run the supplied nozzle heater wire along with it. Keep in mind that from the nozzle to where the tubing enters the building should be run downhill and the portion of tubing exposed to the weather should be kept as short as possible. Tilt the side of the nozzle marked liquid down, to insure proper drainage.

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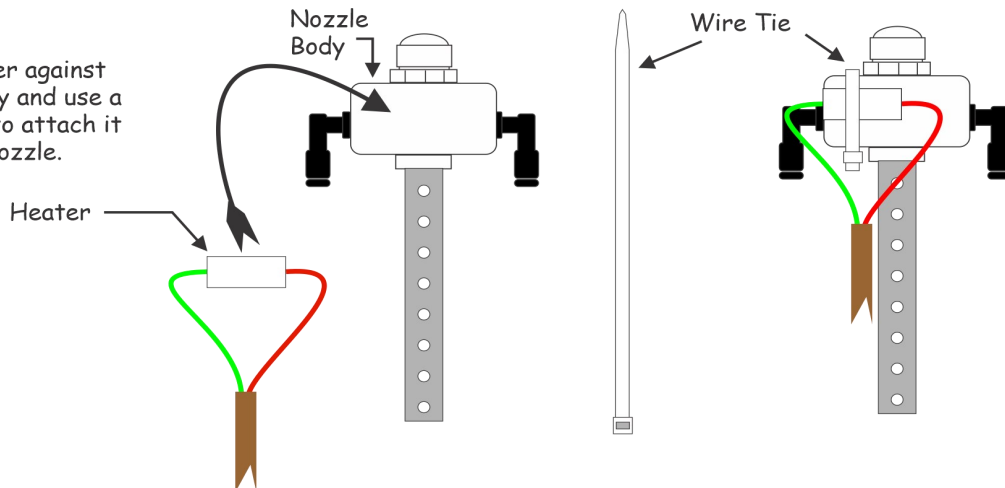
NOZZLE HEATER INSTALLATION

NOTE:

The nozzle heater is only supplied to customers located in areas subject to hard freezing conditions. You will probably be routing the heater cable along with the air and water tubing to the nozzle. Be sure to start at the nozzle end and route the tubing and heater cable down to the Sahara. Wire colors may vary.

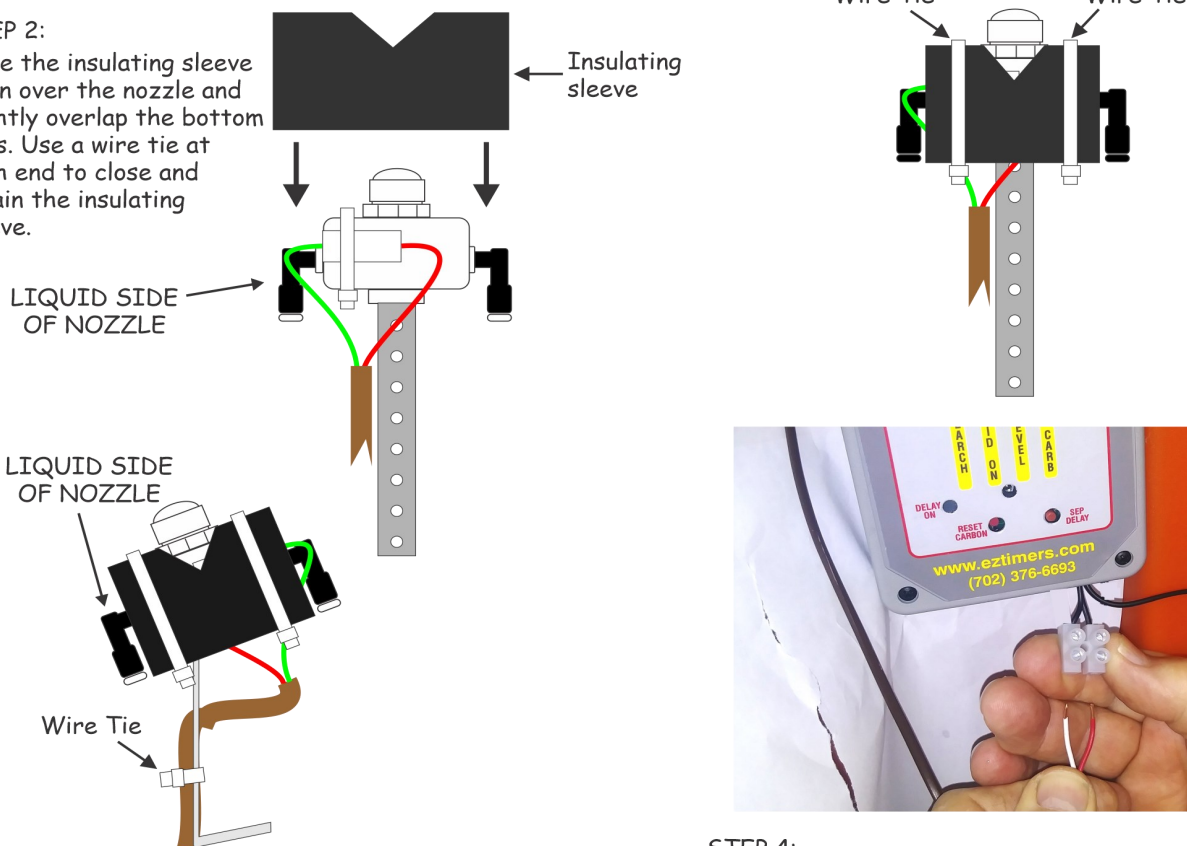
STEP 1:

Place the heater against the nozzle body and use a nylon wire tie to attach it firmly to the nozzle.



STEP 2:

Slide the insulating sleeve down over the nozzle and slightly overlap the bottom ends. Use a wire tie at each end to close and retain the insulating sleeve.



STEP 3:

Secure the wire to the mounting strap with a wire tie. Be sure not to run any exposed tubing horizontally and tilt the nozzle down towards the liquid side as shown in this illustration to allow drainage in order to prevent freezing.



STEP 4:

Connect the wires in the nozzle heater cable to the terminal strip attached to the power supply by inserting the wires into the terminal strip and securely tightening the screws. It does not matter which wires go to which terminal. Plug the power supply into a 120 V outlet and leave it plugged in throughout the cold season. Be sure to route all wiring away from areas where it may be damaged by traffic.

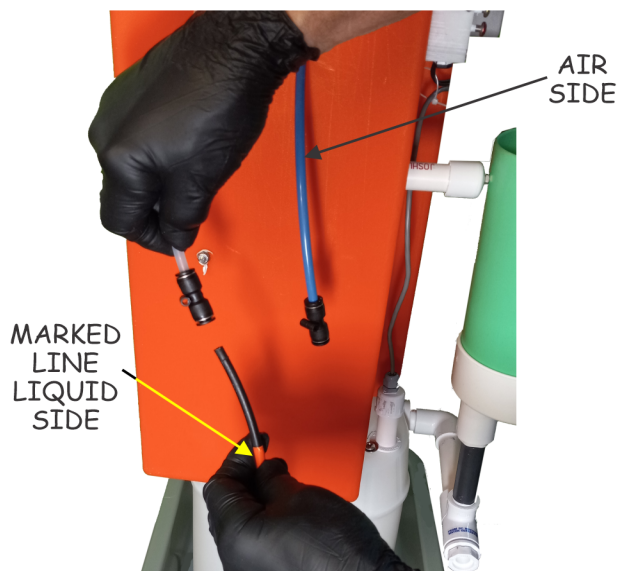
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NOZZLE CONNECTIONS



STEP 1:

When you're using this type of push-in fitting be sure to cut the tubing square using a sharp edge like a razor blade, not a side cutter or scissors. Simply insert the tubing into the fitting and push in until it seats. To disconnect push the fitting towards the body of the fitting and hold it pushed in then pull the tubing out of the fitting. **DO NOT ATTEMPT TO REMOVE TUBING WHILE IT IS PRESSURIZED!**



STEP 3:

After running the tubing from the roof to the Sahara connect the lines to the tubing exiting from the left side of the Sahara paying attention the line that is marked is connected to the white colored water side. If you are in an area where there are hard freezes run the wiring for the nozzle heater along with the tubing.



STEP 2:

The perforated strapping attached to the nozzle provides an easy method to fasten to a pipe or anything you can get a screw into. The nozzle has two different connections, one line for water which is the liquid side, and one for air. The nozzle is stamped on the body indicating which side is liquid and which is air. The twin tubing is marked so use the marked line of tubing for the liquid side. If they are switched the mist will be more like a heavy spray. If you suspect the lines are incorrect change them at the other end where they connect to the Sahara.



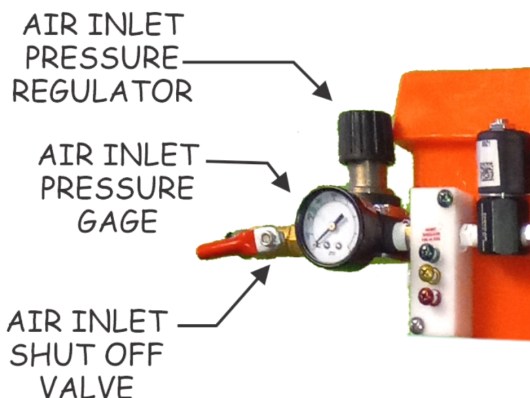
STEP 4:

Avoid excessive coiling, this will detract from nozzle performance. Allow about 3-4 feet of excess tubing at the Sahara to allow movement of the machine for cleaning and maintenance

FILLING AND START-UP

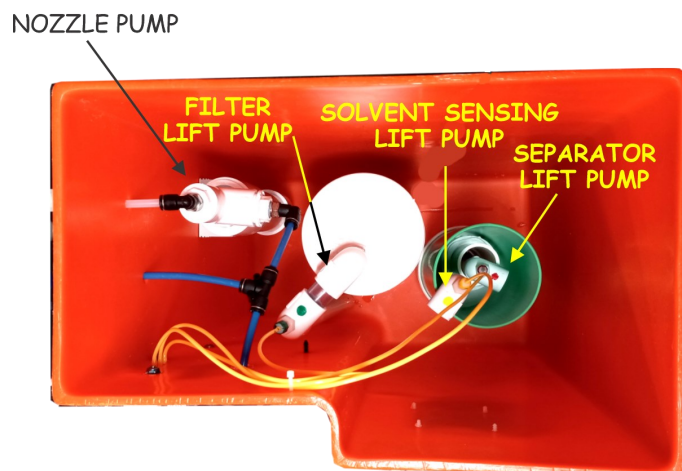
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INITIAL FILL AND TESTING



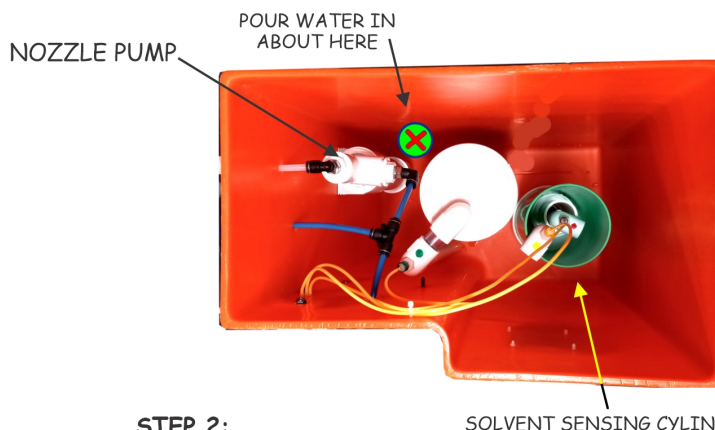
STEP 1:

Be sure the Sahara is not plugged into the electric outlet, the air inlet shut off valve is closed (**HANDLE IS AT RIGHT ANGLE TO THE PIPING, OPPOSITE TO WHAT IS SHOWN**), the air compressor is on, and the air supply tubing to the Sahara is connected.



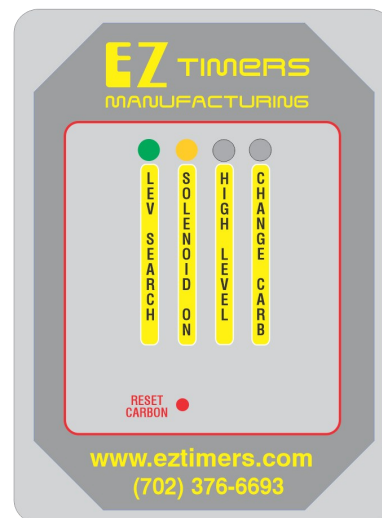
STEP 3:

Observe the lift pumps. Every few seconds there should be a squirt of water from the red marked elbow on the separator lift pump, as the solvent sensing cylinder fills the solvent sensing lift pump will do the same and the filter lift pump should be circulating water which can be seen through the transparent sight glass.



STEP 2:

Remove the lid from the carbon filtration tower and pour about 10 gallons of water into the carbon filtration tower at about the location of the red **X** as shown (**DO NOT POUR IT INTO THE SOLVENT SENSING CYLINDER**). As the tower fills it will overflow into the solvent sensing cylinder and fill the separator reservoir to a level of 3 1/2 to 4 gallons as marked on the tank. Open the air inlet shut off valve and check the air inlet pressure gage for a reading of 45-50 PSI. If it requires adjustment lift up on the black cap of the air pressure regulator and turn it clockwise to increase pressure and counter clockwise to reduce it.

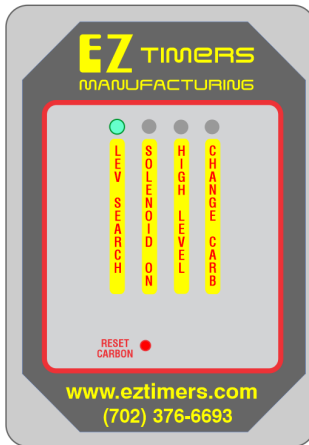


STEP 4:

Plug in the Sahara a wait a few seconds. Observe the lights on the electronic control box. A yellow, then green and yellow then steady green panel light indicators will continue to cycle until the level in the white separator reservoir tank drops down to slightly over the three gallon mark at which time it will shift to a blinking green. During this cycling you will hear air venting through the nozzle solenoid each cycle and if you observe the nozzle you will see it misting whenever the yellow switches on.

CONTROL PANEL OPERATIONS

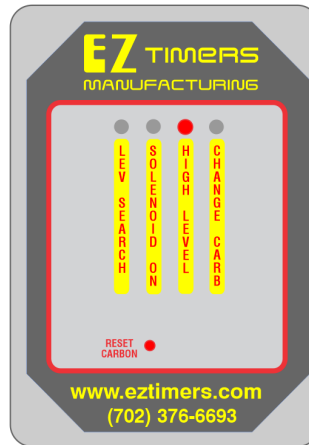
LEVEL CHECKING



BLINKING GREEN:

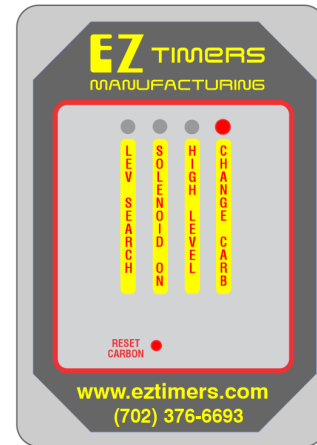
A blinking green indicates that the control senses that the level is OK and the Sahara will continuously cycle through blinking green until the level rises.

ERROR CONDITIONS



HIGH LEVEL RED LITE IS ON:

A red lite and continuous beep indicates either a high level of solvent or a low level of water in the white separator reservoir. The Sahara will cease misting until this situation is corrected.



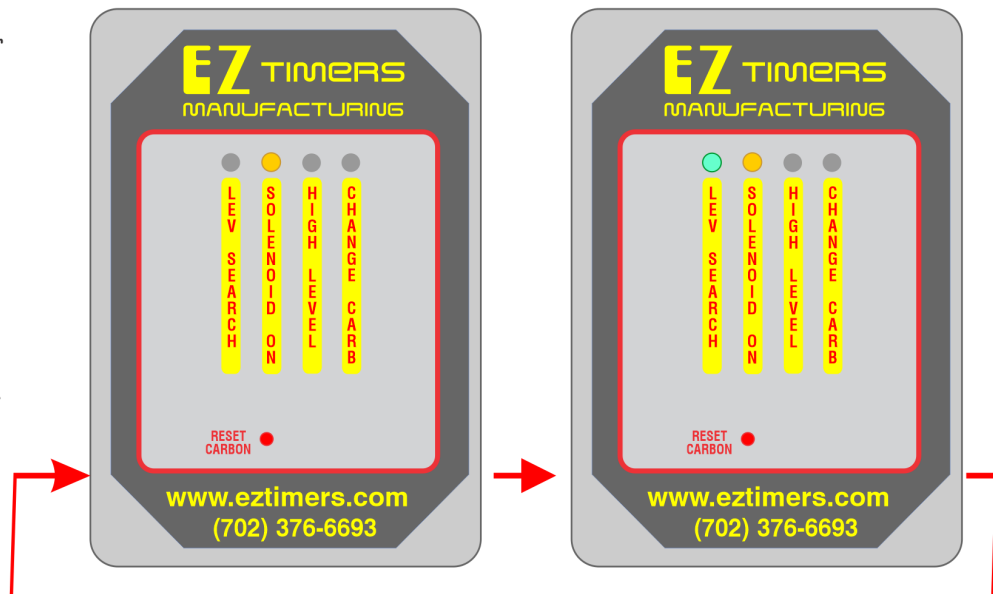
CHANGE CARBON LITE IS ON:

A red lite and intermittent beep indicates it's time for changing the carbon in the filter. To reset hold in the reset carbon button on the lower left of the control panel through a full cycle.

MISTING CYCLE:

When the level in the white separator/reservoir is reached the Sahara will enter the misting cycle, advancing through the steps shown on the illustration. When the level in the white separator/reservoir drops to the shut off point a little above the three gallon mark it will return to a blinking green.

MISTING



STEP 1 SOLID YELLOW:

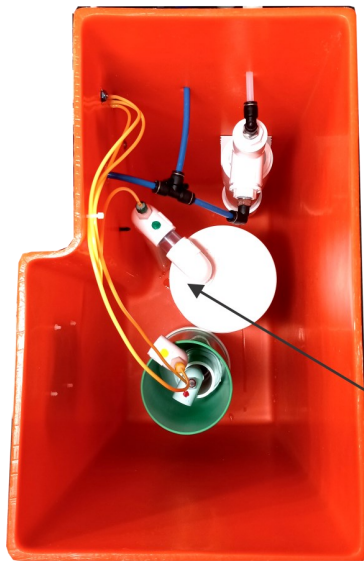
A solid yellow indicates the control has sensed a high water level and the nozzle solenoid has turned on and the nozzle pump has begun the misting process.

STEP 2 SOLID GREEN AND YELLOW:

A solid green and yellow indicates the nozzle solenoid has shut off and the nozzle pump is refilling.

CARBON FILTER MAINTENANCE

FILTER MAINTENANCE CARBON REPLACEMENT



STEP 1:

Lift the filter lift pump off the filter lid and place aside.



STEP 2:

Remove the filter cartridge from the filtration tower. Perform this operation over something waterproof because there will be some dripping.



STEP 3:

Unscrew locking screw from filter cartridge and place it where it won't get lost.



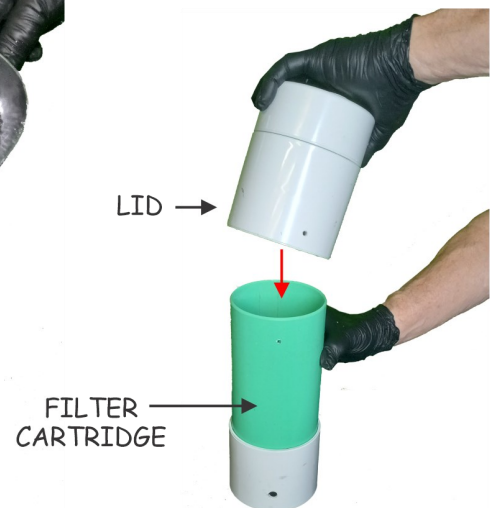
STEP 4:

Remove the lid from the filter cartridge and then dump the used filter granules into your hazardous waste drum.



STEP 5:

Add 2 cups of granulated carbon for lighter than water solvents and 4 cups for perc.



STEP 6:

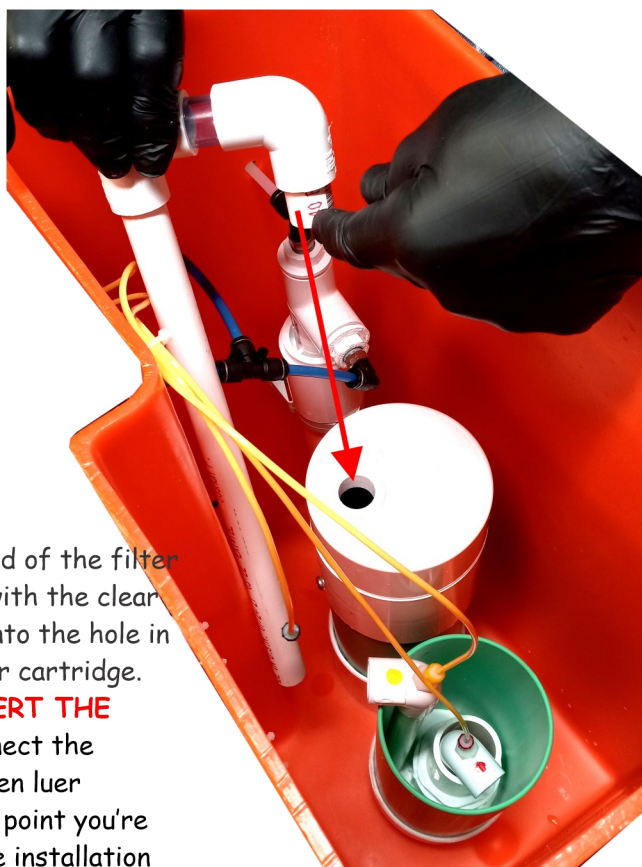
Replace the lid on the top of the filter cartridge.

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FILTER & FILTER LIFT PUMP INSTALLATION

STEP 6

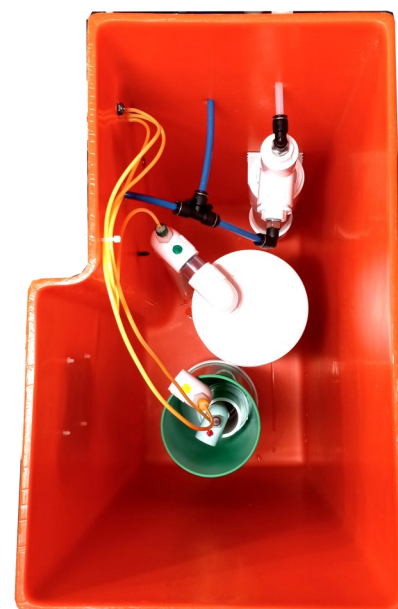
Place the filter cartridge into the filtration tower. There is no set place for the cartridge anywhere it easily fits is OK.



STEP 7:

Insert the short end of the filter lift pump, the one with the clear section in the top into the hole in the top of the filter cartridge.

BE SURE TO INSERT THE SHORT END. Connect the tubing with the green luer connectors. At this point you're finished with all the installation steps inside the filter tower.



STEP 7:

Inspect your work, the inside of the tower should look like the photo above.

**GENERAL
MAINTENANCE**

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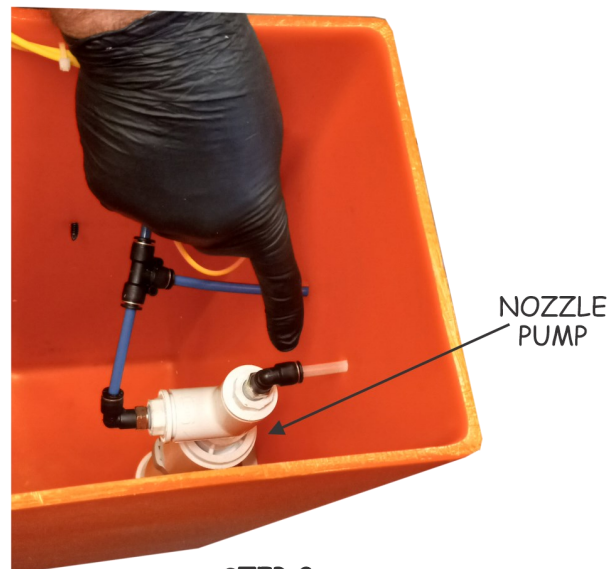
REPLACING THE NOZZLE FILTER

The nozzle filter is used to prevent debris from reaching the nozzle. This is especially important on older perc machines and new installations. If there are problems with misting, always check the nozzle filter by removing it and connecting the nozzle line directly to the nozzle pump to see if this rectifies the situation.

NOZZLE FILTER



STEP 1:
Disconnect the external side of the nozzle filter from the nozzle tubing.



STEP 2:
Disconnect the internal side of the nozzle filter from the nozzle pump.

STEP 3:
Install the new nozzle filter by reversing the process.

DRAINING THE SEPARATOR RESERVOIR OF SOLVENT

Over a period of time, especially with lighter than water solvent systems, solvent will accumulate in the separator reservoir and must be drained out. Normally the electronic panel will notify you of this condition with a red warning indicator and a beeping sound. At this time perform the steps below to continue operations.



STEP 1:

Bend the separator drain tube slightly and rotate the drain tube away from the bottom of the orange carbon tower.



STEP 2:

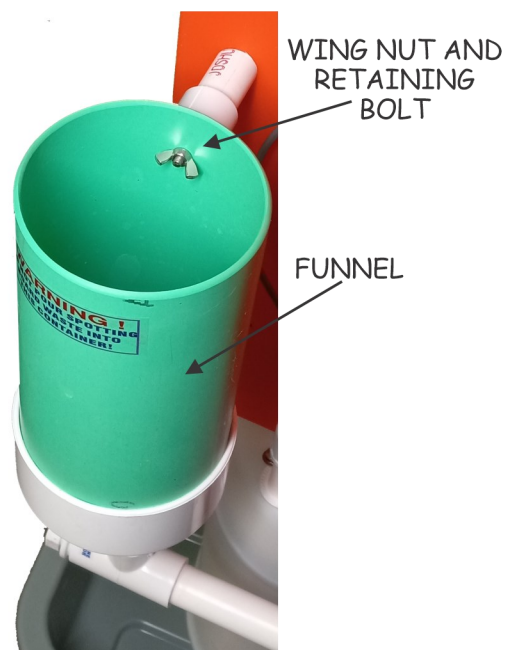
Tilt the tube over into a container and allow to drain until water begins to drain along with solvent. To finish, reverse the process, returning the drain tube to a vertical position and popping it into the cavity at the bottom of the orange carbon tower.

NOTE:

ON PERC SYSTEMS THE DRAIN IS ON THE BOTTOM OF THE SEPARATOR RESERVOIR.

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CLEANING THE WATER INLET FILTER BAG



STEP 1:

Place a paper towel at the bottom of the funnel then unscrew then unscrew the wing-nut holding the funnel to the carbon tower. Gently pull the funnel off of the retaining bolt.



STEP 2:

Rotate the orange carbon tower to gain easy access to the retaining screw holding the water inlet manifold. Unscrew the retaining screw.



STEP 3:

Withdraw the water inlet manifold from the separator reservoir. The manifold and bag will drip liquid so do it over the containment pan or a bucket.



STEP 4:

Cut the zip-tie holding the bag on the inlet water manifold and clean the debris from the bag. Retie the bag to the manifold, reverse the removal process, when this is complete, don't forget to remove the paper towel.

TROUBLESHOOTING

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REPLACING THE NOZZLE PUMP CHECK VALVE



STEP 1:

Disconnect all the tubing running to the nozzle pump. Place a small screw driver into the opening of the clamp between the clamp arms and pry them apart.

STEP 3:

Push the nozzle pump firmly towards the base of the clamp until the clamp arms close and lock, then reconnect the tubing to the nozzle pump.

STEP 2:

Unscrew the old check valve from the nozzle pump and screw on the new one.



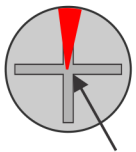
LIFT PUMP ADJUSTMENTS

STEP 1:

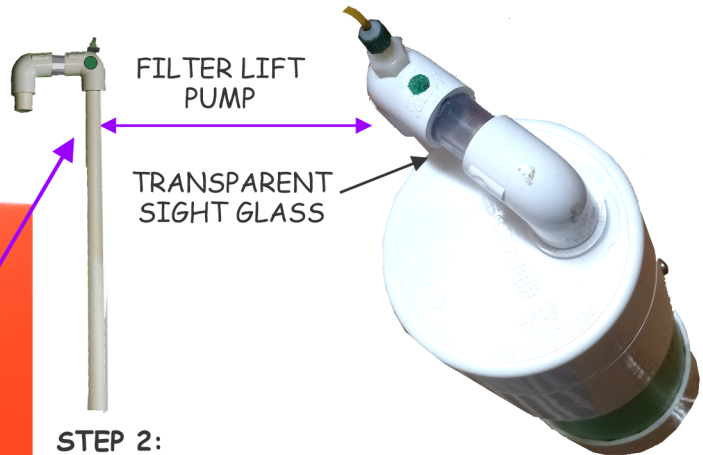
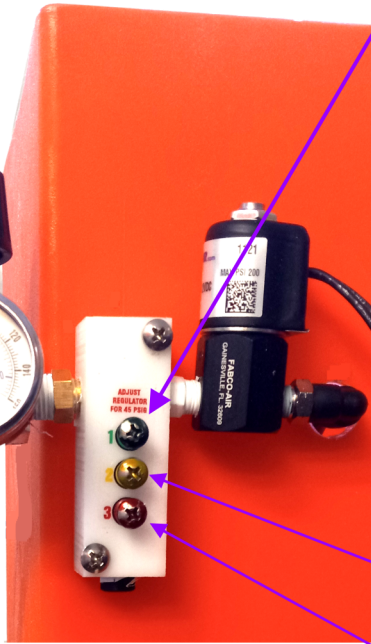
Check the air pressure setting, it should be approximately 45-50 PSI on the air inlet pressure gage. Use the air inlet regulator to adjust if necessary. Make sure the water level in the lower, white separator reservoir is about at the 4 gallon mark.

AIR INLET
REGULATOR

AIR INLET
PRESSURE
GAGE

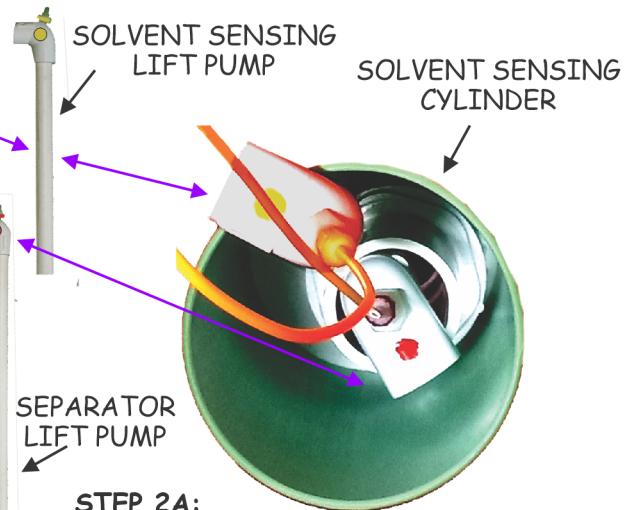


THE RED AREA SHOWS AN ARC OF 20 DEGREES, THIS IS THE AMOUNT TO ADJUST A MANIFOLD SCREW EACH TIME YOU TURN IT. WAIT A 10 SECONDS BETWEEN EACH TURN.



STEP 2:

When the water level in the orange carbon filtration tower is about at the top of the solvent sensing cylinder there should be water surging through the transparent sight glass at the top of the filter lift pump.



STEP 2A:

When the level in the separator reservoir tank is about 4 gallons observe the flow of water exiting the outlets at the elbows of the separator and solvent sensing lift pumps. There should be a pulse of water about every second or two. Keep in mind that as the water level in the separator reservoir tank decreases the amount of water pulsing from the elbow will decrease until the level in the separator reservoir tank reaches about 3 gallons at which point it will nearly stop. **THIS IS A NORMAL CONDITION.**

STEP 3:

If the output of the lift pumps are not adequate an adjustment of the airflow to the faulty pump may be required. Airflow adjustments are made using the 3 colored screws on the air inlet manifold. Each color screw corresponds to the color of the marking on the lift pump it controls. When adjusting the screws clockwise rotation decreases the airflow and counter clockwise increases it. To begin the adjustment disconnect the airline going to the lift pump and hold it near your cheek. **TURN THE ADJUSTMENT SCREW GENTLY CLOCKWISE UNTIL THE AIR FLOW ALMOST STOPS COMPLETELY.** Reconnect the air line and **TURN THE SCREW COUNTER CLOCKWISE ONLY 15-20 DEGREES AT A TIME PAUSING 10 SECONDS AFTER EACH ADJUSTMENT** until you observe the proper water pulses out of the lift pump elbow. If you are adjusting the solvent sensing lift pump there must be a level of water of about 3 inches in the bottom of the green solvent sensing cylinder.

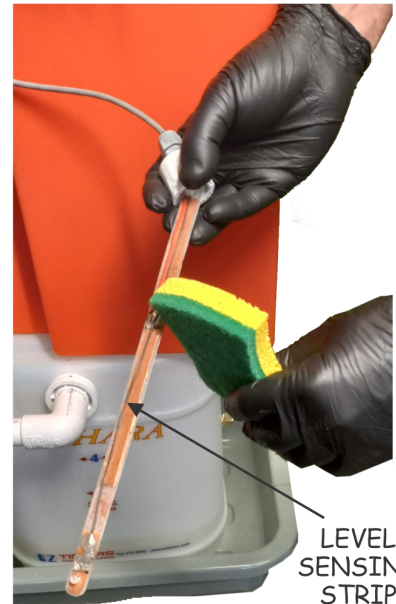
SAHARA MISTER

TESTING THE LEVEL SENSOR AND ELECTRONIC CONTROL PANEL



LEVEL SENSOR CAP

LEVEL SENSOR TUBE



LEVEL SENSING STRIP

STEP 1:

Locate the level sensing tube and remove the level sensing strip by grasping the tube firmly with one hand and rotating the level sensor cap with the other while pulling the cap up and away from the tube.

STEP 2:

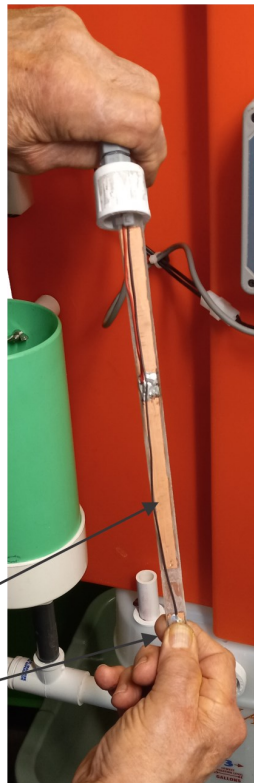
Remove any built up corrosion or film from the level sensing strip using a gentle abrasive like the green side of a Scotch-Brite sponge. be careful not to damage the attached wiring.

STEP 3:

To test the electronic controls plug in the Sahara. With the level sensor strip removed the red indicator for high level and a buzzer will sound. Now, grip the bottom 1 inch between wet fingers and the high level alarm will go off and the green indicator for level search will blink.

LEVEL SENSING STRIP

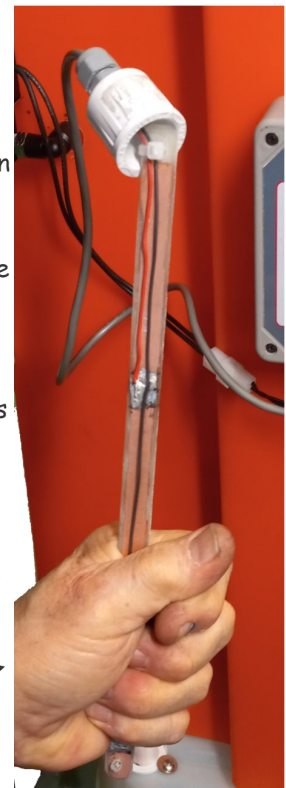
GRIPPING THE BOTTOM 1 INCH



STEP 4:

To test the nozzle pump solenoid circuit grip the level sensing strip in a wetted fist. The yellow solenoid on indicator will light, then the green level search will also light up. As long as you are holding the level sensing strip like this, the Sahara electronics will cycle through the nozzle pumping sequence. When the level sensor strip cleaning and electronics tests are complete reverse the removal process. **WHEN REPLACING THE CAP ON THE LEVEL SENSING TUBE DO NOT USE MUCH FORCE, YOU NEED TO BE ABLE TO REMOVE IT EASILY.**

GRIPPING WITH THE FIST

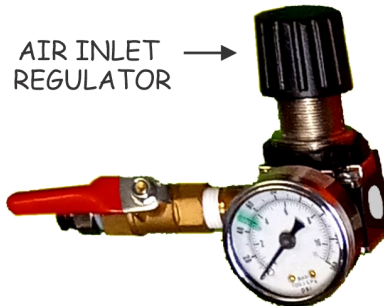


TROUBLESHOOTING EXCESSIVELY HEAVY MIST



STEP 1:

Eliminate any coiling of extra tubing. be sure the tubing is not excessively coiled. Leave no more than 4-6 ft. of extra tubing to allow movement for maintenance.



STEP 2:

Make sure regulator is set between 45-50 PSI.



STEP 3:

Install new nozzle filter.



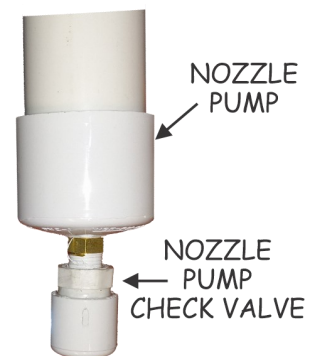
STEP 4:

Be sure ring on nozzle is screwed on tight.



STEP 5:

While nozzle is spraying push the cleaning tool in and out of the center hole in nozzle. be sure tool goes all the way down through the center hole and not just into the top part of hole.



STEP 6:

Change the nozzle pump check valve.